

Amendments to the Claims

1. (Original) An optical reading device having a light source, a movable optical waveguide, an actuator, a detector, and wherein the actuator and detector are integrally formed in a substrate, the movement of the waveguide being effected by action of the actuator thereon, and wherein the detector provides a confocal detection system adapted to effect a detection of light backscattered into cladding of the waveguide.
2. (Original) The device as claimed in claim 1 further including at least one motion sensor such that any movement of the waveguide is detectable by the motion sensors.
3. (Currently amended) The device as claimed in ~~any preceding~~ claim [[1]] wherein the optical waveguide is formed as an integrated channel guide formed in dielectric materials and surrounded by a cladding of restricted lateral dimensions.
4. (Currently amended) The device as claimed in claim 1 ~~or claim 2~~ wherein the waveguide ~~may be~~ [[is]] externally attached or coupled to the device.
5. (Currently amended) The device as claimed in ~~any preceding~~ claim [[1]] wherein the optical waveguide is single-moded and polarization- preserving.
6. (Currently amended) The device as claimed in ~~any preceding~~ claim [[1]] wherein the source is polarized and arranged to excite a single polarization mode of the waveguide.
7. (Currently amended) The device as claimed in ~~any preceding~~ claim [[1]] wherein the optical waveguide is positioned on a suspended cantilever above a substrate.
8. (Original) The device as claimed in claim 7 wherein the waveguide is supported by a mechanical layer along its entire length.

9. (Currently amended) The device as claimed in claim 7 wherein the waveguide has a root and is supported only near its root by a mechanical layer.
10. (Currently amended) The device as claimed in ~~any preceding~~ claim [[1]] wherein the actuator and detector are integrally formed in a silicon based layer.
11. (Original) The device as claimed in claim 10 wherein the detector is constructed in the silicon layer as a p-n junction or p-i-n junction photodiode.
12. (Currently amended) The device as claimed in ~~any preceding~~ claim [[1]] wherein the detector is placed beneath the waveguide to detect cladding modes present in the waveguide.
13. (Original) The device as claimed in claim 7 wherein the detector is a photodetector and is placed or formed at the tip of the cantilever.
14. (Original) The device as claimed in claim 7 wherein the photodetector is placed near the root of the cantilever.
15. (Original) The device as claimed in claim 7 wherein the actuator is placed near the root of the cantilever.
16. (Original) The device as claimed in claim 15 wherein the actuator is constructed as an electrothermal or electrostatic drive.
17. (Original) The device as claimed in claim 16 wherein the actuator is an electrothermal shape bimorph actuator.
18. (Original) The device as claimed in claim 17 wherein the waveguide is placed over a cold arm of the electrothermal shape bimorph actuator.

19. (Original) The device as claimed in claim 16 wherein the electrothermal shape bimorph actuator has dual hot arms.
20. (Original) The device as claimed in claim 18 wherein electrical current in the cold arm is monitored and suppressed using an active feedback circuit.
21. (Original) The device as claimed in claim 17 wherein the motion sensors are placed near the root of the cold arm and the root of the cantilever.
22. (Original) The device as claimed in claim 21 wherein the motion sensors are constructed as pairs of piezo-resistors, arranged to detect differential strain caused by bending of the structure and connected to a differential readout circuit.
23. (Currently amended) An optical reading system comprising a device having at least one ~~or more~~ of the following components:
 - a) a cantilevered single-mode optical waveguide suitable for transmitting light onto a target thereby illuminating the target and adapted to effect a reception of the back-scattered signal from the target into the cladding of the waveguide,
 - b) an actuator capable of achieving large in-plane displacement,
 - c) motion sensors capable of providing the necessary signals for closed loop control of the scan amplitude,
 - d) a cladding mode detector capable of implementing a confocal detection system so as to effect a detection of the light backscattered into the cladding of the waveguide,
 - e) a lens, which may be formed in the wall of the device package, the device being coupled to a laser source, which may be hybridised or integrally formed with the device of the present invention or linked thereto by a section of optical fibre so as to provide the incident light to the waveguide.

24. (Currently amended) The system as claimed in claim 23 wherein the elements a) through e) are all fabricated in silicon-based materials using a compatible process.

25. (Original) A method of forming an optical reader comprising the steps of:

- a) forming a detector in a substrate,
- b) forming an actuatable cantilever also in the substrate,
- c) coupling a waveguide to the cantilever, and

wherein the cantilever and detector are integrally formed in the substrate, the waveguide being adapted to transmit light onto a target and receive light backscattered from the target, the light received back into the waveguide being detectable using the detector.